

# CIRCA Grant Program: Products & Tools for Resilience

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CAFM Conference  
October 24, 2018

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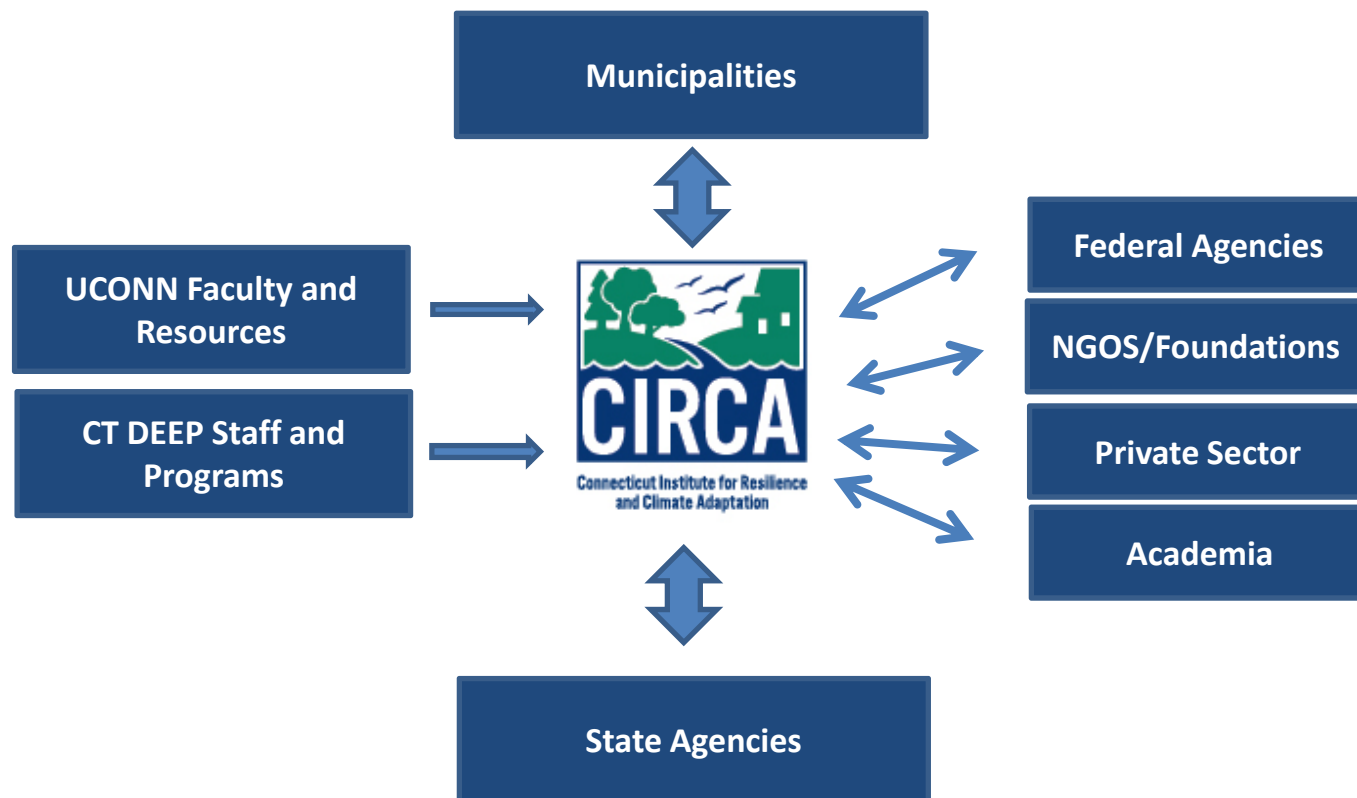


# Mission

Increase the resilience and sustainability of vulnerable communities in the state's coastal and inland areas to severe storms and the growing impacts of climate change on natural, built, and human environments.

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## CIRCA Grant Programs:

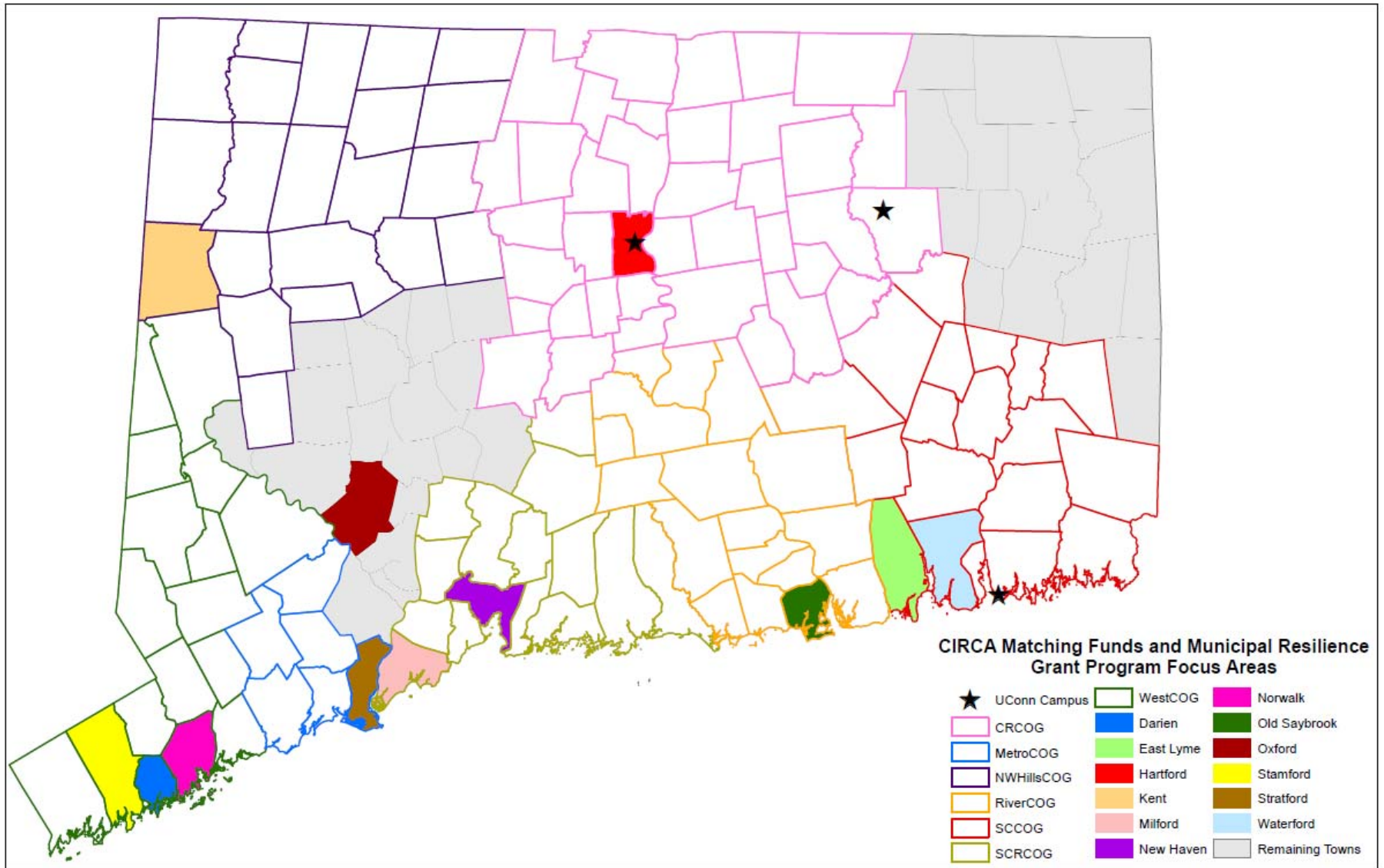
# Over \$1.5 million awarded to 35 projects

- **Research Grants – 6 Grants ~ \$500K**
  - Awards to: 5 departments/11 faculty teams
- **Matching Funds – 11 Grants ~ \$330K**
  - Awards to: 4 NGOs, 2 COGs, 5 academic
- **Municipal Resilience – 18 Grants ~ \$745K**
  - Awards to: 10 municipalities, 5 COGs

***NOTE: many products due end of 2018***

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# Project Focus Areas

- Coastal flooding and waves
- Critical infrastructure
- Inland flooding
- Living shorelines/green infrastructure
- Policy and planning
- Sea level rise

# WestCOG - Coastal & Inland Flooding

- Regional approach to increase participation of 4 municipalities into FEMA's CRS program: Greenwich, Darien, Norwalk, Danbury.
- CRS Activities - outreach and training, GIS mapping, coordination between municipalities and FEMA.
- Framework to expand in additional communities.

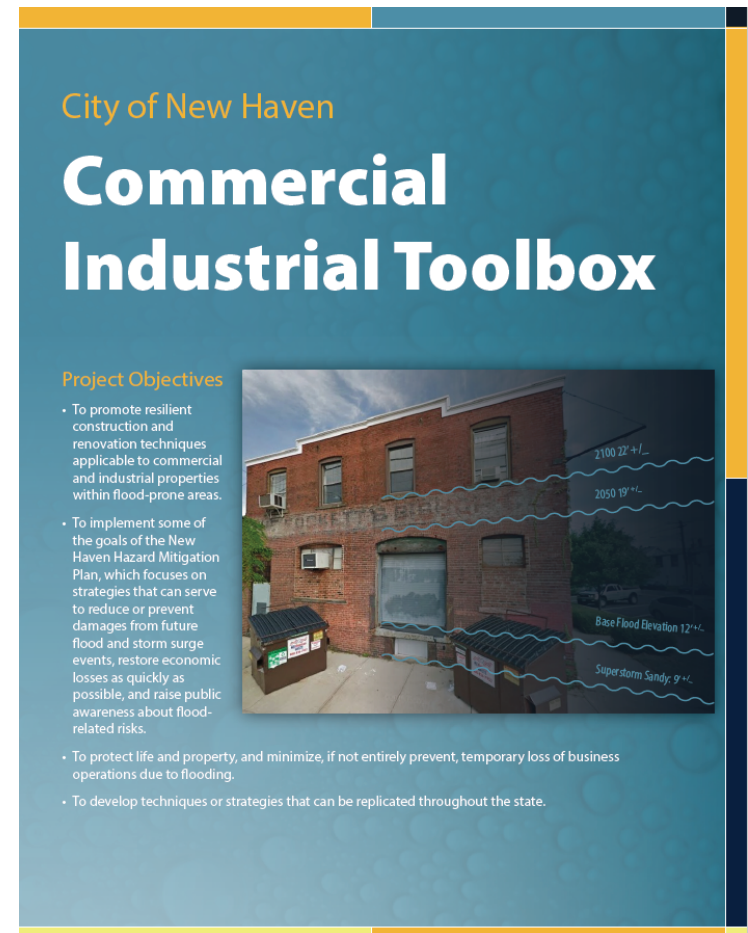


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# New Haven - Coastal Flooding

- Maps vulnerable commercial and industrial properties.
- Promotes resilient construction techniques for these properties in flood prone areas.
- Identifies resources/strategies that property owners can consider to reduce risk to natural hazards.
- Implements goals of New Haven's Hazard Mitigation Plan.



# NHCOG – Inland Flooding and Green Infrastructure

- Manual describes LID approach, engineering specifications for successful systems, and sample enforcement tools.
- Targets parcel-by-parcel land use decisions; can be tailored to each municipality's unique water sources and historic development patterns.
- Designed for the Planning & Zoning Commission of the town of Morris but approach is TRANSFERABLE.

Effective Date: November 1, 2017

## MORRIS

Low Impact Sustainable Development  
and Stormwater Management  
Design Manual



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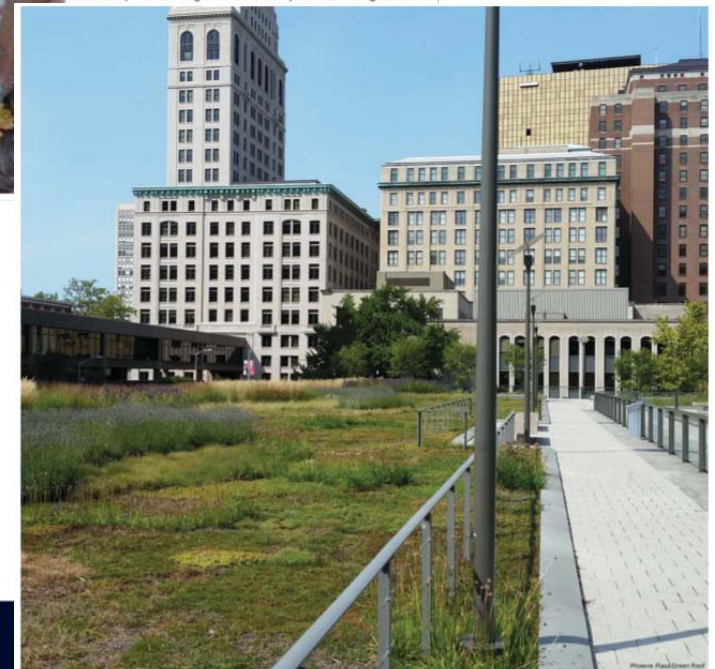


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# Hartford – Green Infrastructure

- Green Infrastructure Specialist hired for one year.
- Address stormwater issues and implement Climate Stewardship Initiative.
- Products =  
Green Infrastructure Handbook,  
Retain the Rain Flyer



**GREEN INFRASTRUCTURE HANDBOOK**  
Best Management Practices in Hartford, Connecticut

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## 2.3 URBAN TREE CANOPY

### BENEFITS:

- Water Quality
- Air Quality
- Stormwater Capture
- Habitat Creation
- Heat Island Effect
- Energy Savings

### CONSTRAINTS:

- Poorly Draining Soils
- Space Limitations
- Steep Slopes
- Retrofit Use

### SUITABLE FOR:

- Buildings
- Streets
- Landscape

### MAINTENANCE:

#### Tasks:

- Watering (dry months)
- Cleaning out debris
- Weeding
- Trimming
- Other (mulch/mow/etc.)

### KEY:

- Most Appropriate
- Moderately Appropriate



Bushnell Park on Trumbull Street

### WHAT IS URBAN TREE CANOPY?

Urban tree canopy (UTC) consists of the leaves and branches of the trees that cover the ground when viewed from above. Trees are among the most prevalent forms of green infrastructure found in urban areas, offering a multitude of benefits that improve the quality of life within communities. Many cities have recognized the value of trees and have set canopy goals to restore and protect their urban forests. Residents, businesses, and community groups can make a difference by planting and caring for trees.

### BENEFITS OF TREES

- Reduced Heat Island Effect**
  - Trees provide shade, which can cool the surrounding area by between 4°F - 14°F and increase the longevity of the adjacent pavement
- Cost Savings**
  - Trees generate enough lifetime benefits and savings to exceed the initial installation costs
  - Landscaping with trees can increase property values by 20%
  - Trees can reduce A/C needs by 30% and save 20-50% of the energy used for heating
  - Improved Air and Water Quality

# SCCOG – Critical Infrastructure

- Assessment of facilities within storm surge and flood zones.
- Recommendations to keep facilities on-line during hazard events.
- Town halls, fire stations, police stations, etc.
- Flood, wind, and snow-load risks assessed during site visits.

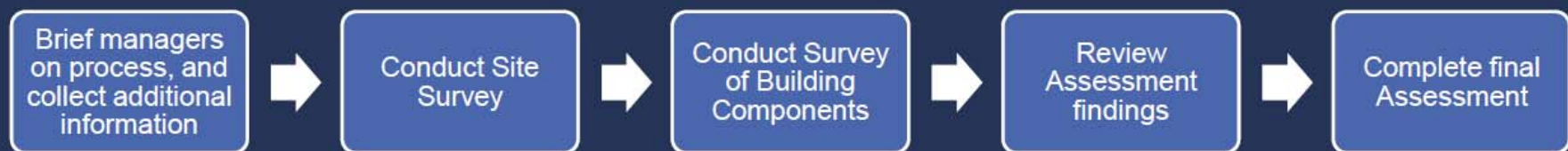


*Wet Floodproofing*



*Barriers at Openings*

What is the process for conducting the Critical Facilities Assessment?



# Norwalk & Stratford Point – Living Shorelines

- CIRCA matching grants for assessment, design, baseline monitoring activities.
- Thin layer deposition using dredge material.
- Living breakwaters – reef balls.



# Living Shorelines Map Viewer

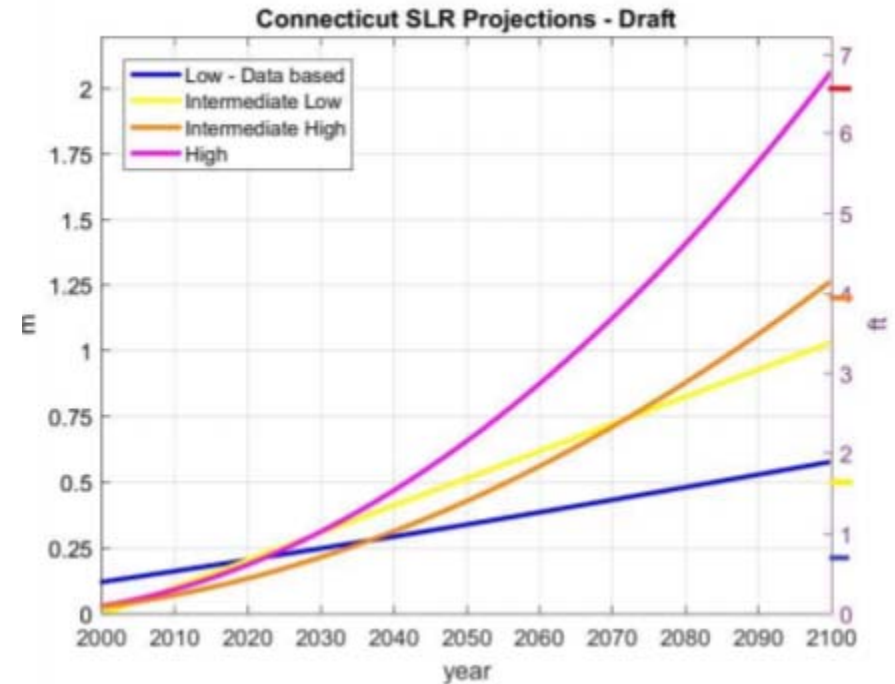
Potential locations for living shoreline strategies & wave height statistics



# Policy and Planning

Senate Bill No. 7/Public Act 18-82  
“An Act Concerning Climate  
Change Planning and Resiliency”

- Provides legislative authority for projected sea level rise of 20 inches or 50cm by 2050
- Scientific basis for projections revisited every 10 years



Legal and Policy Analysis to Support Resilience:

[Sea Level Rise Projections for the State of Connecticut](#)

[Floodplain Building Elevation Standards](#)

[Height Restrictions on Elevated Buildings](#)

[Ocean Front State Coastal Management Programs](#)

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## Floodplain Building Elevation Standards Current Requirements & Enhancement Options for Connecticut Shoreline Municipalities

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Legal Writing Fellow

May 1, 2018

This White Paper is sponsored by CIRCA, the Connecticut Institute for Resilience and Climate Adaptation. This work is made possible through a grant from the State of Connecticut Department of Housing Community Development Block Grant Disaster Recovery Program and the US Department of Housing and Urban Development.

**DISCLAIMER:** This white paper addresses issues of general interest and does not give any specific legal advice pertaining to any specific circumstance. Parties should obtain advice from a lawyer or other qualified professional before acting on the information in this paper.

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## Height Restrictions on Elevated Residential Buildings in Connecticut Coastal Floodplains

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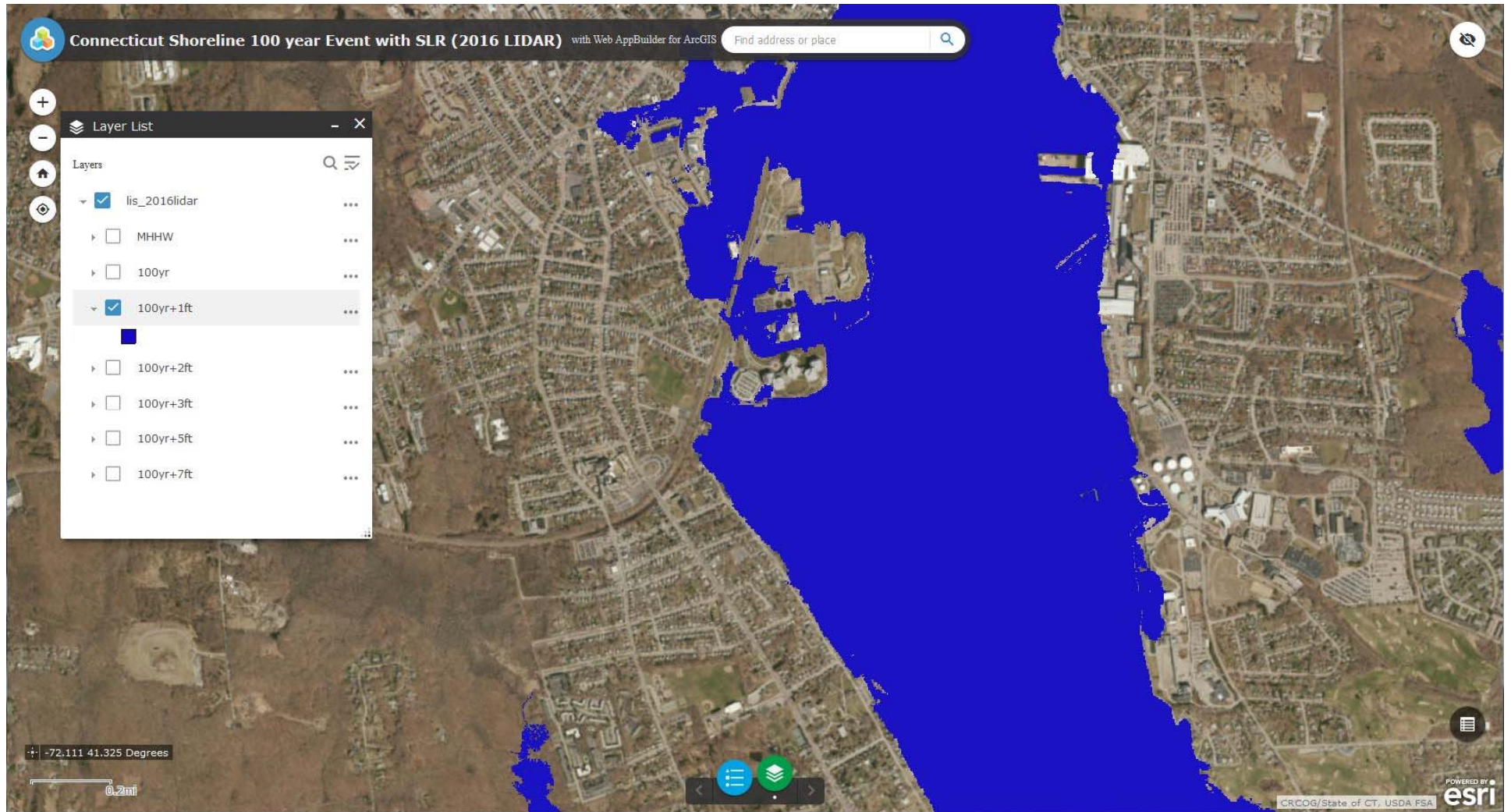
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GIS layers being created for the 100 year flood level plus various sea level rise scenarios. Online maps available state-wide in Dec.



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# Other CIRCA Tools – COMING SOON...

Riverine map tool displaying graphs of return intervals for flooding at points along statewide river networks.

“Connecticut Physical Climate Science Assessment Report”

- Scientific consensus about observed statewide recent changes and projections for temperature and precipitation.
- Team includes researchers from fields of physical climate science, climate modeling, land-atmosphere and hydrologic processes, and water management.

New CIRCA website – Living Shorelines and Green Infrastructure

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## *GREEN INFRASTRUCTURE AND LIVING SHORELINES*

General information about green infrastructure, living shorelines and related projects.

**Overview**

Guidance and general concepts and protocols. (reports, documents, presentations)

**References**

Interactive tools and data that can directly support planning and design.

**Tools**

Planning and designed or implemented green infrastructure or living shoreline projects.

**Projects**

# GREEN INFRASTRUCTURE & LIVING SHORELINES

## [CIRCA Home](#)

[GI/LS Home](#)

[Overview](#)

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## Projects

CIRCA has directly supported projects focused on the planning or implementation of Green Infrastructure and Living Shorelines applications at a local or regional scale across the State of Connecticut. The reports, documents, and presentations pertaining to these project can provide site-specific information valuable to communities considering these forms of erosion control alternatives. Many of the projects listed were funded through the CIRCA Municipal Grants or Matching Fund programs.



### Fenwick – [Hepburn Dune and Marsh Preservation Project](#)

The Hepburn Dune and Marsh Preservation Project implements living shoreline strategies at a site on the coast of Long Island Sound, located just east of the Katherine Hepburn Estate in the Old Saybrook Borough of Fenwick.

[LEARN MORE](#)



### Hartford – [Green Infrastructure Specialist for a More Resilient and Sustainable Future](#)

The City of Hartford received grant assistance from CIRCA to hire a Green Infrastructure Specialist for 12 months. This position will assist the City of Hartford with its rigorous, comprehensive climate resiliency effort – the Climate Stewardship Initiative (CSI) – which aims to improve quality of life through environmental stewardship, while advancing the economy, improving public health, and promoting social equity.

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## Projects

### FEATURED TOOL



### Wave Data (CREST Mapper)

The NOAA CREST project has significant wave heights for different return periods for LIS, and measurements of waves in Old Saybrook and New Haven harbors. This information is summarized in an online map viewer.

### FEATURED REFERENCE



### Northeast Living Shoreline Profile Pages

CIRCA is working with five New England states and regional organizations, to collaboratively analyze living shorelines in Connecticut and the Northeast region.

### FEATURED REFERENCE



### Use of Dredged Material for Salt Marshes

This project aims to determine the feasibility of the process of utilizing dredge materials to construct artificial marshes and islands to decrease erosion and improve

### FEATURED PROJECT



### Stratford Point Living Shoreline

On-going coastal restoration efforts and research at Stratford Point in Fairfield county consist of a living breakwater, tidal marsh, coastal dune and upland woody/grassland mosaics.

[illegible]

# Product Distribution

- CIRCA Website
- Blog posts and Resilience Roundup
- DEEP newsletters
- Press releases
- Project networking
- Workshops
- Broader engagement for next 3 years
  - Workshop presentations
  - NDR outreach activities
- Others?

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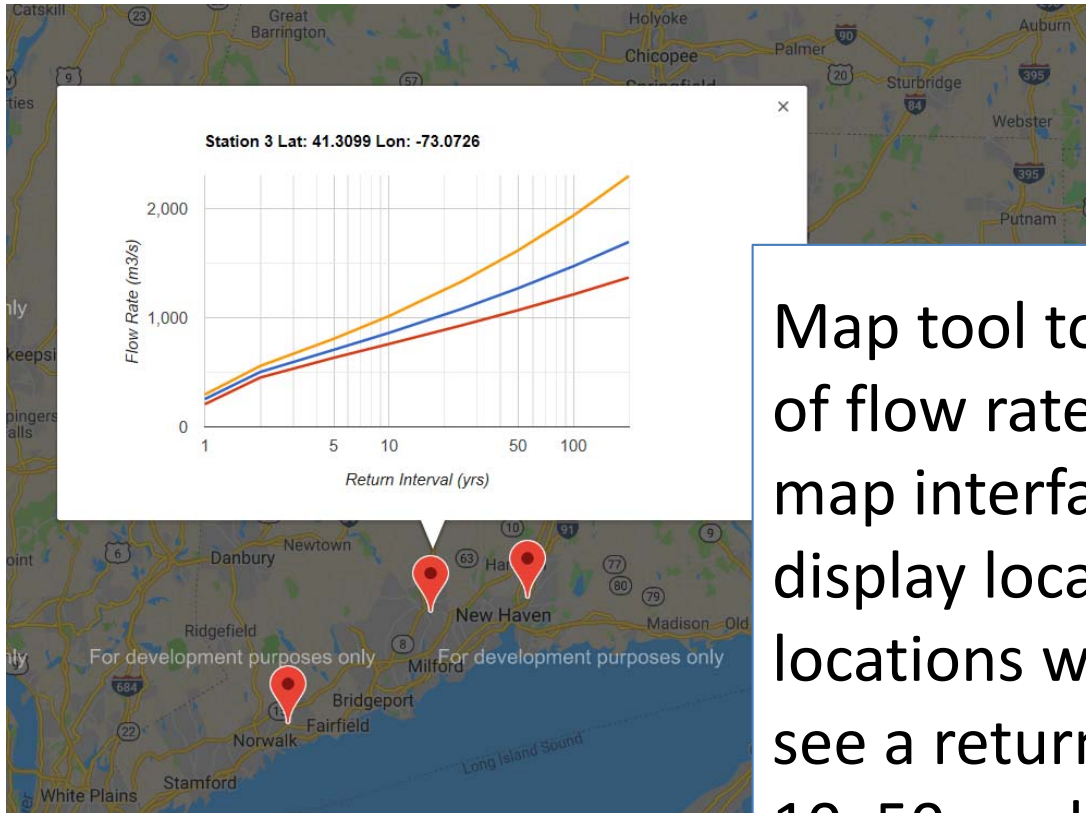
860-405-9214

Sign Up for CIRCA's Resilience Roundup &  
Announcements: *[circa.uconn.edu](http://circa.uconn.edu)*

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# CIRCA Product: Coastal and Inland Flooding



Map tool to display the return interval of flow rates for river systems. A google map interface is being developed to display locations - interactively click on locations where data exists to visually see a return interval graph showing 1, 5, 10, 50, and 100 years at a location along specific river networks.